

AMENDMENTS TO THE CLAIMS:

If entered, this listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims:

1. (Currently Amended) A method of forming self-aligned, anti-via interconnects in an integrated circuit device comprising:

providing a semiconductor substrate;

5 depositing a first metal layer overlying said semiconductor substrate;

depositing an etch stop layer overlying said first metal layer wherein said etch stop layer comprises a tungsten containing film;

10 depositing a second metal layer overlying said etch stop layer;

 etching through said second metal layer, said etch stop layer, and said first metal layer to form connective lines;

15 thereafter etching ~~partially~~ through said second metal layer to form vias;

CS-99-210

thereafter depositing a dielectric layer overlying said vias, said connective lines and said semiconductor substrate; and

20 polishing down said dielectric layer to complete said self-aligned, anti-via interconnects in the manufacture of the integrated circuit device.

2. (Currently Amended) The method according to Claim 1 wherein said first and second metal ~~layer~~ layers comprises one of the group of: aluminum, aluminum alloys, tungsten and copper.

3. (Original) The method according to Claim 1 wherein said semiconductor substrate comprises semiconductor devices in and on a silicon substrate covered by an insulating layer.

4. (Canceled)

5. (Original) The method according to Claim 1 wherein said dielectric layer comprises one of the group of: SiO₂, SiOF (fluorinated silica glass), SiOC (C-substituted siloxane), amorphous SiC:H, MSQ (methylsilsesquioxane), porous

CS-99-210

5 materials, PPXC polymer (poly(chloro-p-xylylene), PPXN polymer (poly-p-xylylene), and VT-4 (tetrafluoro-p-xylylene).

6. (Original) The method according to Claim 1 wherein said dielectric layer is deposited to a thickness of between about 5,000 Angstroms and 20,000 Angstroms.

7. (Currently Amended) The method according to Claim 1 further comprising depositing an anti-reflective coating layer overlying said second metal layer prior to said step of etching through said second metal layer to form
5 connective lines.

8. (Currently Amended) The method according to Claim 7 1 ~~wherein said~~ further comprising depositing an anti-reflective coating layer overlying said second metal layer wherein said anti-reflective coating layer comprises
5 titanium nitride (TiN) ~~and wherein said anti-reflective coating layer is a polishing step for said step of polishing down said dielectric layer.~~

9. (Currently Amended) A method of forming self-aligned,

CS-99-210

anti-via interconnects in an integrated circuit device
comprising:

providing a semiconductor substrate;

5 depositing a first metal layer overlying said
semiconductor substrate;

depositing an etch stop layer overlying said first
metal layer wherein said etch stop layer comprises a
tantalum containing film;

10 depositing a second metal layer overlying said ~~first~~
~~metal layer~~ etch stop layer;

~~depositing an anti-reflective coating layer comprising~~
~~titanium nitride (TiN) overlying said second metal layer;~~

 etching through ~~said anti-reflective coating layer,~~
15 said second metal layer, said etch stop layer, and said
first metal layer to form connective lines;

 thereafter etching through ~~said anti-reflective~~
~~coating layer and~~ said second metal layer to form vias;

 thereafter depositing a dielectric layer overlying
20 said vias, said connective lines and said semiconductor
substrate; and

 polishing down said dielectric layer to complete said
self-aligned, anti-via interconnects in the manufacture of
the integrated circuit device wherein said anti-reflective
25 coating layer is a polishing stop.

10. (Original) The method according to Claim 9 wherein said first metal layer and said second metal layer comprise one of the group of: aluminum, aluminum alloys, tungsten and copper.

11. (Original) The method according to Claim 9 wherein said first metal layer is deposited to a thickness of between about 1,000 Angstroms and 10,000 Angstroms.

12. (Original) The method according to Claim 9 wherein said second metal layer is deposited to a thickness of between about 3,000 Angstroms and 10,000 Angstroms.

13. (Canceled)

14. (Canceled)

15. (Currently Amended) The method according to Claim ~~14~~ 9 wherein said step of etching through ~~said ARC layer and~~ said second metal layer to form vias has an endpoint at said etch stop layer.

16. (Canceled)

17. (Original) The method according to Claim 9 wherein said dielectric layer comprises one of the group of: SiO₂, SiOF (fluorinated silica glass), SiOC (C-substituted siloxane), amorphous SiC:H, MSQ (methylsilsesquioxane),
5 porous materials, PPXC polymer (poly(chloro-p-xylylene), PPXN polymer (poly-p-xylylene), and VT-4 (tetrafluoro-p-xylylene).

18. (Currently Amended) A method of forming self-aligned, anti-via interconnects in an integrated circuit device comprising:

providing a semiconductor substrate;

5 depositing a first metal layer overlying said semiconductor substrate;

depositing an etch stop layer overlying said first metal layer wherein said etch stop layer comprises a tantalum containing film;

10 depositing a second metal layer overlying said first metal layer;

depositing an anti-reflective coating layer comprising titanium nitride (TiN) overlying said second metal layer;

etching through said anti-reflective coating layer,

CS-99-210

15 said second metal layer, said etch stop layer, and said
second metal layer to form connective lines;

thereafter etching through said anti-reflective
coating layer and said second metal layer to form vias
wherein said etch stop layer acts as an etch stop;

20 thereafter depositing a dielectric layer overlying
said vias, said connective lines and said semiconductor
substrate; and

polishing down said dielectric layer to complete said
self-aligned, anti-via interconnects in the manufacture of
25 the integrated circuit device wherein said anti-reflective
coating layer is a polishing stop.

19. (Original) The method according to Claim 18 wherein
said first metal layer and said second metal layer comprise
one of the group of: aluminum, aluminum alloys, tungsten,
and copper.

20. (Original) The method according to Claim 18 wherein
said first metal layer is deposited to a thickness of
between about 1,000 Angstroms and 10,000 Angstroms.

CS-99-210

21. (Original) The method according to Claim 18 wherein said second metal layer is deposited to a thickness of between about 3,000 Angstroms and 10,000 Angstroms.

22. (Canceled)

23. (Original) The method according to Claim 18 wherein said dielectric layer comprises one of the group of: SiO₂, SiOF (fluorinated silica glass), SiOC (C-substituted siloxane), amorphous SiC:H, MSQ (methylsilsesquioxane),
5 porous materials, PPXC polymer (poly(chloro-p-xylylene), PPXN polymer (poly-p-xylylene), and VT-4 (tetrafluoro-p-xylylene).